

CLAIMS:

1. An assay method for an agent which affects Importin  $\alpha$  acetylation, the method including:

5 (a) treating an acetylated Importin  $\alpha$  polypeptide or peptide with a test compound, or

(b) treating with a test compound an Importin  $\alpha$  polypeptide or peptide which comprises one or more lysine residues corresponding to those found at positions Lys 18,  
10 Lys 20 and Lys 22 in wild-type Importin  $\alpha$  Rch1, in which polypeptide or peptide one or more of said lysines is not acetylated, or

(c) bringing into contact a substance which includes a CBP polypeptide which acetylates Importin  $\alpha$ , a substance  
15 which includes an Importin  $\alpha$  polypeptide or peptide including a site acetylated by CBP, and a test compound;

and

(d) determining acetylation of the Importin  $\alpha$  polypeptide or peptide.

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2. An assay method for an agent which affects Importin  $\alpha$  activity, the method including:

(a) bringing into contact Importin  $\alpha$  and a test compound; and

25 (b) determining Importin  $\alpha$  activity in the presence and

absence of a CBP polypeptide which acetylates Importin  $\alpha$ .

3. A method according to claim 2 comprising determining ability of Importin  $\alpha$  to bind to Importin  $\beta$ , to translocate 5 into the nucleus and/or import a cargo protein.

4. An assay method for an agent which modulates interaction between CBP and Importin  $\alpha$ , the method including:

CBP2  
10 (a) bringing into contact a first substance including a CBP polypeptide or peptide, a second substance including an Importin  $\alpha$  polypeptide or peptide, and a test compound under conditions in which, in the absence of the test compound being an inhibitor, the first and second substances interact; and

15 (b) determining interaction between the first and second substances.

5. An assay method for an agent which affects ability of Importin  $\alpha$  to (i) bind Importin  $\beta$ , (ii) translocate into the 20 nucleus, and/or (iii) import a cargo protein, the method comprising:

- (a) bringing into contact CBP and a test compound, and
- (b) determining CBP acetyltransferase activity;

wherein a test compound which inhibits CBP acetyltransferase 25 activity is identified as a candidate said agent.

6. A method according to claim 5 comprising determining acetylation of Importin  $\alpha$  by CBP.

7. A method according to claim 5 comprising determining  
5 Importin  $\alpha$  activity.

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10 8. A method according to any one of claims 5 to 7 wherein a test compound which inhibits CBP acetyltransferase activity is further tested for ability to affect ability of Importin  $\alpha$  to (i) bind Importin  $\beta$ , (ii) translocate into the nucleus, and/or (iii) import a cargo protein.

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15 9. An assay method for an agent which interacts with a region of CBP or a region Importin  $\alpha$ , which region of CBP interacts with Importin  $\alpha$  and which region of Importin  $\alpha$  interacts with CBP, a said agent which interacts with a said region being a candidate modulator of interaction between CBP and Importin  $\alpha$ , the method including:

20 (a) bringing into contact a substance which includes a CBP peptide which interacts with Importin  $\alpha$ , or which includes an Importin  $\alpha$  peptide which interacts with CBP, and a test compound; and

(b) determining interaction between said substance and the test compound.

10. A method according to any one of claims 1 to 9 further comprising formulating a said agent into a composition comprising at least one additional component.

5 11. A method according to claim 10 where the composition includes a pharmaceutically acceptable excipient.

12. A method according to any one of claims 1 to 11 further comprising providing a said agent, or, where said agent is  
10 peptidyl, nucleic acid encoding a said agent, to cells to modulate one or more of ability of Importin  $\alpha$  to (i) bind Importin  $\beta$ , (ii) translocate into the nucleus, and/or (iii) import a cargo protein.

15 13. A method according to claim 12 wherein said agent or nucleic acid is provided to cells *in vitro*.

14. A method according to any one of claims 1 to 9 further comprising use of a said agent, or, where said agent is  
20 peptidyl, nucleic acid encoding a said agent, in the manufacture of a medicament for treating a disorder of Importin  $\alpha$  activity.

15. A peptide fragment of Importin  $\alpha$  or of CBP, which  
25 peptide is about 40 amino acids or less, and which modulates

interaction between Importin  $\alpha$  and CBP.

16. A peptide according to claim 15 which is an Importin  $\alpha$  peptide comprising one or more lysine residues corresponding 5 to those found at positions Lys 18, Lys 20 and Lys 22 in wild-type Importin  $\alpha$ .

17. A peptide according to claim 15 or claim 16 which is about 20 amino acids in length.

18. An isolated nucleic acid encoding a peptide according to any one of claims 15 to 17.

19. A peptide according to any of claims 15 to 17 or nucleic 15 acid according to claim 18 for use in a method of treatment of a disorder of Importin  $\alpha$  activity in a human or animal body.

20. Use of a peptide according to any of claims 15 to 17 or 20 nucleic acid according to claim 18 in the manufacture of a medicament for treatment of a disorder of Importin  $\alpha$  activity in a human or animal body.

21. An agent obtained by a method according to any one of 25 claims 1 to 9.

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22. An agent according to claim 21, or, where the agent is peptidyl, nucleic acid encoding the agent, for use in a method of treatment of a disorder of Importin  $\alpha$  activity in a human or animal body.

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23. Use of an agent according to claim 21, or, where the agent is peptidyl, nucleic acid encoding the agent, in the manufacture of a medicament for treatment of a disorder of Importin  $\alpha$  activity in a human or animal body.